

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

## PCT

To:

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NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT

(PCT Rule 71.1)

MAY 24 2004

Date of mailing  
(day/month/year)

18.05.2004

Applicant's or agent's file reference  
AD6857PCT

☐ TO BE REVIEWED  
BY ATTORNEY

**IMPORTANT NOTIFICATION**

International application No.  
PCT/US 03/16535

International filing date (day/month/year)  
15.05.2003

Priority date (day/month/year)  
16.05.2002

Applicant  
E.I. DU PONT DE NEMOURS AND COMPANY

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

**EEL NOTED**

Name and mailing address of the international preliminary examining authority:



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# PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference AD6857PCT	<b>FOR FURTHER ACTION</b>		See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)
International application No. PCT/US 03/16535	International filing date ( <i>day/month/year</i> ) 15.05.2003	Priority date ( <i>day/month/year</i> ) 16.05.2002	
International Patent Classification (IPC) or both national classification and IPC B32B17/10			
Applicant E.I. DU PONT DE NEMOURS AND COMPANY			

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 7 sheets, including this cover sheet.
 

☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of    sheets.

3. This report contains indications relating to the following items:
 

I    ☒ Basis of the opinion

II   ☐ Priority

III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability



IV ☐ Lack of unity of invention

V   ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

VI ☐ Certain documents cited

VII ☐ Certain defects in the international application

VIII ☐ Certain observations on the international application

Date of submission of the demand  11.12.2003	Date of completion of this report  18.05.2004
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer  Kanetakis, I  Telephone No. +49 89 2399-8083 <div style="text-align: right;">  </div>

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/US 03/16535

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, Pages**

1-15 as originally filed

**Claims, Numbers**

1-22 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).  
☐ the language of publication of the international application (under Rule 48.3(b)).  
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority in written form.  
☐ furnished subsequently to this Authority in computer readable form.  
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.  
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:  
☐ the claims, Nos.:  
☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

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**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes: Claims	10-16,18
	No: Claims	1-9,17,19-22
Inventive step (IS)	Yes: Claims	
	No: Claims	1-22
Industrial applicability (IA)	Yes: Claims	1-22
	No: Claims	

**2. Citations and explanations**

**see separate sheet**

**Re Item V**

**Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

Reference is made to the following documents cited in the International Search Report (ISR), especially to the passages mentioned therein:

D1: WO-A-0143963  
D2: US-A-5227241  
D3: US-A-5573842  
D4: EP-A-0102502  
D5: US-A-5187217  
D6: US-A-4696971

1 Novelty (Art. 33(2) PCT)

1.1 Documents D1 and D2 are considered relevant for the novelty of the present claims. In particular:

1.2 D1 claims a composite laminate interlayer for adhering glass laminates consisting essentially of three layers of plasticized polyvinyl butyral (PVB) sheet adhered to each other wherein the inner layer of polyvinyl butyral has a glass transition temperature ( $T_g$ ) greater than 35° C and the outer layers of PVB has a  $T_g$  less than 35° C (claim 7). Example 15 of D1 is a laminate glass/PVB1/PVB5/PVB1/glass, wherein PVB1 has a  $T_g$  of about 32°C and PVB5 has a  $T_g$  of about 45°C, and wherein PVB1 and PVB5 layers contain 38 phr and 22 phr, respectively, of the plasticizer 3GEH (=triethylene glycol di(2-ethylhexanoate), said plasticizer being identical to that presently claimed (see present claim 8). What is not disclosed in D1 is the presence of a "bleaching compound" in the stiff PVB layer. However, the problem of a PVB becoming yellow is already known from D3 or D4, which in effect use an "optical brightener" (D3:abstract and claim 1), or a "material which avoids coloration of the PVB" (D4: p. 1, l. 12-p. 2, l. 2). It appears thus that adding a "bleaching compound" is common practice in this field, although not explicitly disclosed in D1 or D2.

The composite laminate interlayer according to D1 is used as intrusion resistant glazing for architectural and automotive applications (hence, same subjective problem to be solved as current application). For example, the composite laminate

according to the disclosure of D1 is intrusion resistant. It exhibits a maximum flexural modulus of greater than 350 N/cm (preferably greater than 650 N/cm), and exhibits a maximum load before failure of at least 3000 N (preferably 6000 N), see claims.

D1 is considered to detract from novelty of present claims 1-9,17 and 19-22.

- 1.3 Similarly, D2 is considered novelty destroying for the subject matter of claims 1-7 and 19-22. D2 does not disclose  $T_g$  values or ranges of  $T_g$  values, however, it discloses different amount of plasticizer, hence different  $T_g$ 's. For example, according to Example 1 of D2, fig. 1 represents a piece of laminated glass 1, formed of an outer sheet of chemically tempered glass 2 having a thickness of 4 mm, and an inner sheet of chemically tempered glass 3 having a thickness of 6 mm, between which is positioned a layered insert 4 formed of 7 plies of PVB. The two outer plies 5 and 6 at the contact surfaces of the sheets of glass 2 and 3 have a thickness of 0.76 mm and are formed of PVB with a high proportion of plasticizer. In said example, outer layers 5 and 6 contain 37.5 parts by weight of di-n-hexyl adipate per 100 parts by weight of PVB. The five inner layers of PVB 7, each 0.5 mm in thickness, are formed of PVB with a lower proportion of plasticizer; in this example, 19.5 parts by weight of di-n-hexyl adipate per 100 parts by weight of PVB resin. These amounts of plasticizer result in different  $T_g$ 's for the outer layers (hence soft) and the inner layers (hence stiff). Moreover, the laminated glass of fig. 1 having the structure and composition of Ex. 1 resists breakage due to impacts, even at low temperature, shows no layer delamination, glass scaling or cleavage and its transparency is perfect.

2 Inventive step (Art.33(3) PCT)

- 2.1 Subjective problem to be solved by the current application is to provide glass laminates which are intrusion resistant, see p. 3, l. 10-23. D1 tries to solve same technical problem: see p. 2, l. 14-17. D2 also tries to solve same technical problem: see col. 2, l. 12-24 and col. 1, l. 32-34.

Hence, D1 or D2 are closest prior art. Starting, e.g. from D1 the objective problem is to avoid coloration of the stiff PVB sheet due to higher extrusion temperatures, see present p. 6, l. 36-p. 7, l. 10. However, the use of such a compound in plasticized PVB sheets (and not necessarily stiff PVB sheets) is already known

for the same purpose from D3 or D4, see the relevant passages cited in the International Search Report. D3 succeeds in solving said problem using, e.g. stilbene derivatives as an optical brightener (D3: col. 5, l. 7-11). D4 succeeds in solving said problem using a triester of phosphoric acid (D4: claim 1; p. 4, l. 1-16).

Hence, the subject matter of claim 1 does not involve an inventive step, starting from D1 (or D2) as closest prior art, in combination with either D3 or D4.

- 2.2 Things become a bit more complicated if the surfactant (which may be identical to said bleaching compound) comes into play. The surfactant DOSS (present claim 13) is already known for same purpose in PVB preparations from D5 and D6. The process of D6 using said surfactant (or emulsifier) helps, i.a. to produce PVB with increased impact resistance and transparency (D6: col. 2, l. 41-53). On the other hand, D5 uses DOSS in order to prepare PVB as an intermediate layer with better adhesion between two sheets of glass (D5: col. 1, l. 16-32). In both D5 and D6 the product is eventually washed, apparently no or little surfactant remains. However, present claim 10 (and invariably claim 1 in case the surfactant is identical to the bleaching compound) does not specify which amount of surfactant (or bleaching compound) is necessary to provide a film with little or no yellowness, and moreover, present example 1 does not specify said amount either. Hence, based on that always a minute amount of surfactant (or bleaching compound) remains in the final plasticized PVB product and hence DOSS is present, albeit in whatever minute proportions, D5 (or D6) are considered to be relevant for the question of inventive step of claim 1, if considered along with either D1 or D2.
- 2.3 All dependent claims 2-22 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step.
- 3 Clarity (Art. 6 PCT)
- 3.1 Present example 1 apparently is state of the art according to D1: the PVB employed (which are the same as comp. ex. C4) do not contain any bleaching compound. The technical effect that example 1 shows a better impact than the comparative is already known from D1 or D2.
- 3.2 The word "about" has not been deleted from  $T_g$  ranges (such as in claim 1),

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EXAMINATION REPORT - SEPARATE SHEET**

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plasticizer composition ranges (claim 2), etc. The same applies for the word "about" in this context in the description.

- 4 Non-SI units have not been additionally expressed in terms of the SI units stipulated by Rule 10.1/(a)/and/(b) PCT.
- 5 Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents D1 and D2 is not mentioned in the description, nor are these documents identified therein.
- 6 Reference to the priority document on p. 1, l. 6-8 is not regarded as being part of the disclosure. However, said reference has not been deleted. Similarly, expressions of the type "the disclosures of which are herein incorporated by reference/ by reference in their entirety" appearing in several positions in the description have not been deleted, see the PCT Guidelines PCT/GL/3 Chapter II 4.17-4.17a.